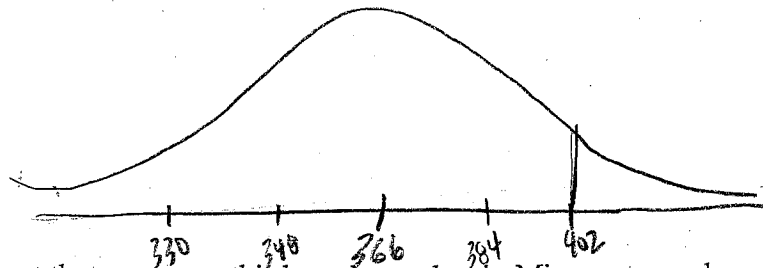


Review Problem #1

Key

In a particular school district in Minnesota, third-grade students are given a particular reading test each spring. Scores on this test follow a normal distribution, with a mean of 366 points and a standard deviation of 18 points. Draw a picture of the situation so that you can make sure that your answers make sense.



- 1.) Suppose for a moment that you are a third-grade teacher in Minnesota, and one of your students, David, scores 402 points on this test. What percentage of third-graders would you expect to score LESS than David?

Using the Empirical Rule

$$95\% + 2.5\% \rightarrow \boxed{97.5\%}$$

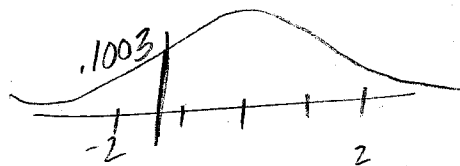
$$\frac{402 - 366}{18} = 2$$

$$\boxed{.9772}$$

- 2.) Janelle scored 343 points on the test. What percentage of third-graders scored BETTER than Janelle?

$$z = \frac{343 - 366}{18}$$

$$z = -1.28$$



$$1 - .1003 = .8997$$

$$\approx 90\%$$

- 3.) What percentage of third graders scored BETWEEN 336 points and 396 points?

$$\frac{336 - 366}{18} = -1.666$$

$$-1.67$$

$$.0475$$

$$\frac{396 - 366}{18} = 1.666$$

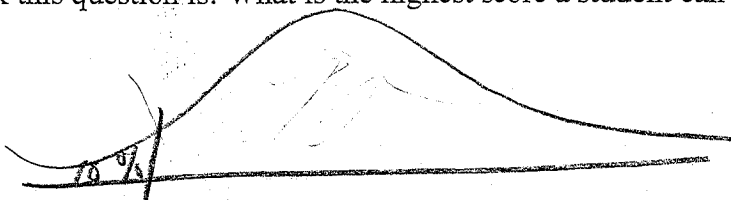
$$1.67$$

$$.9525$$

$$.9525 - .0475 = .905$$

$$\boxed{90.5\%}$$

- 4.) A score in the LOWEST 10% of the class is considered not to be good and any student who falls in this range is required to take remedial reading. What score cuts off the bottom 10% of students? (Another way to ask this question is: What is the highest score a student can get and still have to take the remedial course?)



$$-1.28$$

$$-1.28 = \frac{X - 366}{18} = \boxed{342.96}$$

$$-23.04 = X - 366$$

- 5.) Now, imagine that you have another third-grade student named Julie, and you observe that exactly 15% of the third-grade students who took this reading test scored HIGHER than Julie. This means that Julie's score was equal to what value?

Look up 85%

$$z = 1.04$$



$$1.04 = \frac{X - 366}{18} = \boxed{384.72}$$